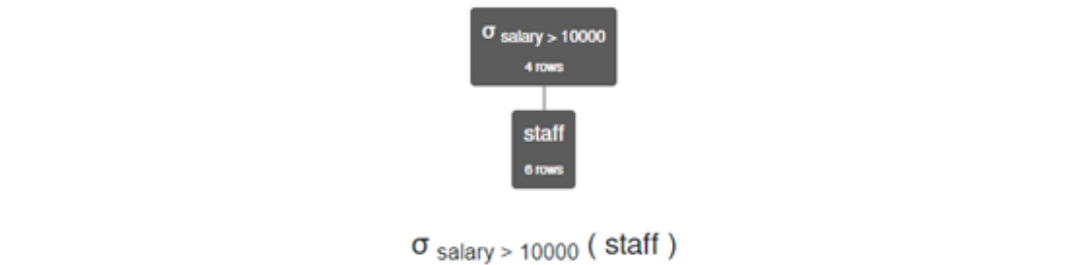


```
group: dreamhome
branch = {
branchNo:string, street:string, city:string, postcode:string
'B005', '22 Deer Rd', 'London', 'SW1 4EH'
'B007', '16 Argyll St', 'Aberdeen', 'AB2 3SU'
'B003', '163 Main St', 'Glasgow', 'G11 9QX'
'B004', '32 Manse Rd', 'Bristol', 'BS99 1NZ'
'B002', '56 Clover Dr', 'London', 'NW10 6EU'
}
staff = {
staffNo:string, fName:string, lName:string, position:string, sex:string, DOB:date, salary:number, branchNo:string
'SL21', 'John', 'White', 'Manager', 'M', 1945-10-01, 30000, 'B005'
'SG37', 'Ann', 'Beech', 'Assistant', 'F', 1960-10-11, 12000, 'B003'
'SG14', 'David', 'Ford', 'Supervisor', 'M', 1958-11-24, 18000, 'B003'
'SA9', 'Mary', 'Howe', 'Assistant', 'F', 1970-02-19, 9000, 'B007'
'SG5', 'Susan', 'Brand', 'Manager', 'F', 1940-06-03, 24000, 'B003'
'SL41', 'Julie', 'Lee', 'Assistant', 'F', 1965-06-13, 9000, 'B005'
}
PrivateOwner = {
ownerNo:string, fName:string, lName:string, address:string, telNo:string
'CO46', 'Joe', 'Keogh', '2 Fergus Dr, Aberdeen AB2 7SX', '01224-861212'
'CO87', 'Carol', 'Farrel', '6 Achray St, Glasgow G32 9DX', '0141-357-7419'
'CO40', 'Tina', 'Murphy', '63 Well St, Glasgow G42', '0141-943-1728'
'CO93', 'Tony', 'Shaw', '12 Park Pl, Glasgow G4 0QR', '0141-225-7025'
}
PropertyForRent = {
propertyNo:string, street:string, city:string, postcode:string, propertyType:string, rooms:number, rent:number, ownerNo:string, staffNo:string, branchNo:string
'PA14', '16 Holhead', 'Aberdeen', 'AB7 5SU', 'House', 6, 650, 'CO46', 'SA9', 'B007'
'PL94', '6 Argyll St', 'London', 'NW2', 'Flat', 4, 400, 'CO87', 'SL41', 'B005'
'PG4', '6 Lawrence St', 'Glasgow', 'G11 9QX', 'Flat', 3, 350, 'CO40', NULL, 'B003'
'PG36', '2 Manor Rd', 'Glasgow', 'G32 4QX', 'Flat', 3, 375, 'CO93', 'SG37', 'B003'
'PG21', '18 Dale Rd', 'Glasgow', 'G12', 'House', 5, 600, 'CO87', 'SG37', 'B003'
'PG16', '5 Novar Dr', 'Glasgow', 'G12 9AX', 'Flat', 4, 450, 'CO93', 'SG14', 'B003'
}
client = { clientNo:string, fName:string, lName:string, telNo:string, preftype:string, maxrent:number
'CR76', 'John', 'Kay', '0207-774-5632', 'Flat', 425
'CR56', 'Aline', 'Stewart', '0141-848-1825', 'Flat', 350
'CR74', 'Mike', 'Ritchie', '01475-392178', 'House', 750
'CR62', 'Mary', 'Tregar', '01224-196720', 'Flat', 600
}
Viewing={
clientNo:string, propertyNo:string, viewDate:date, comments:string
'CR56', 'PA14', 2001-05-24, 'too small'
'CR76', 'PG4', 2001-04-20, 'too ote'
'CR56', 'PG4', 2001-05-26, NULL
'CR62', 'PA14', 2001-05-14, 'no dining room'
'CR56', 'PG36', 2001-04-28, NULL
}
Registration = {
clientNo:string, branchNo:string, staffNo:string, datejoin:string
'CR76', 'B005', 'SL41', '2001-01-02'
'CR56', 'B003', 'SG37', '2000-04-11'
'CR74', 'B003', 'SG37', '1999-11-16'
'CR62', 'B007', 'SA9', '2000-03-07'
}
```

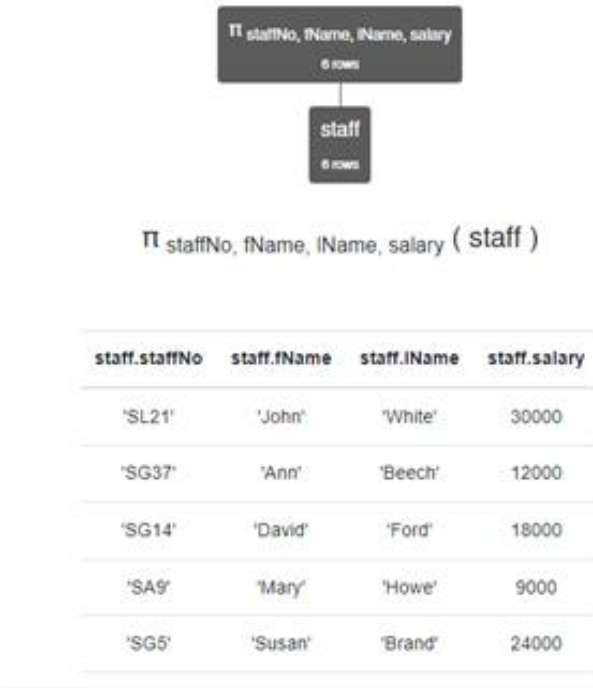
Даалгавар 2

1.



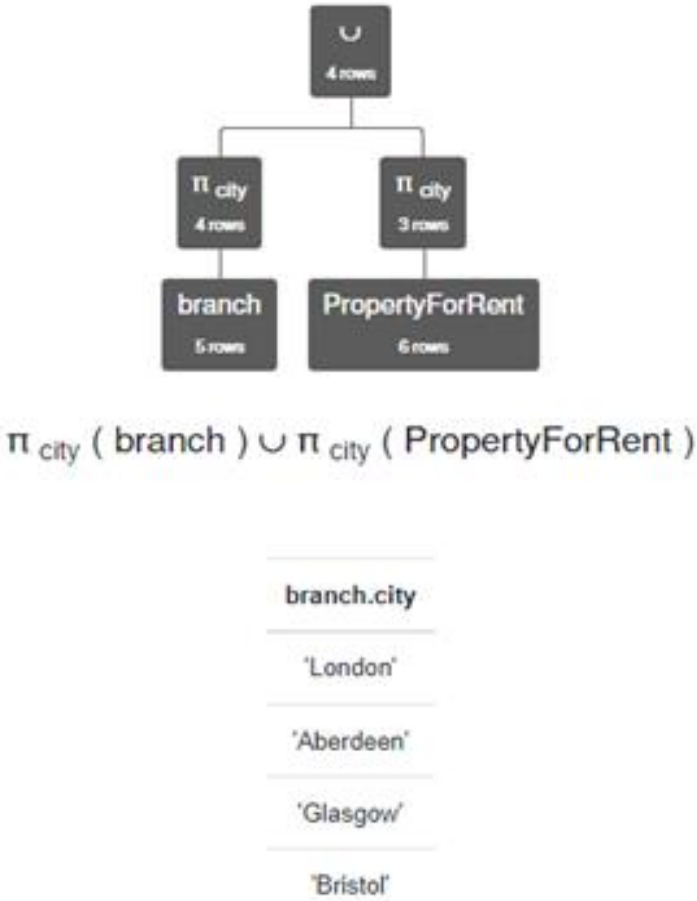
staff.staffNo	staff.fName	staff.lName	staff.position	staff.sex	staff.DOB	staff.salary	staff.branchNo
'SL21'	'John'	'White'	'Manager'	'M'	1945-10-01	30000	'B005'
'SG37'	'Ann'	'Beech'	'Assistant'	'F'	1960-10-11	12000	'B003'
'SG14'	'David'	'Ford'	'Supervisor'	'M'	1958-11-24	18000	'B003'
'SG5'	'Susan'	'Brand'	'Manager'	'F'	1940-06-03	24000	'B003'

2.



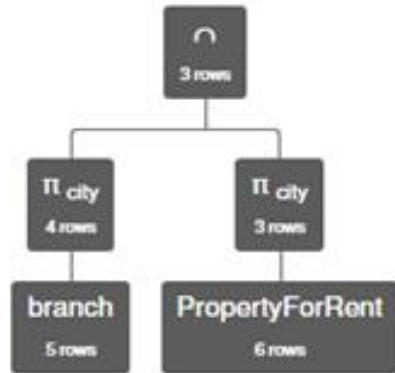
staff.staffNo	staff.fName	staff.lName	staff.salary
'SL21'	'John'	'White'	30000
'SG37'	'Ann'	'Beech'	12000
'SG14'	'David'	'Ford'	18000
'SA9'	'Mary'	'Howe'	9000
'SG5'	'Susan'	'Brand'	24000

3.



branch.city
'London'
'Aberdeen'
'Glasgow'
'Bristol'

4.



$\pi_{city} (branch) \cap \pi_{city} (PropertyForRent)$

branch.city
'London'
'Aberdeen'
'Glasgow'

5.



$\pi_{city} (branch) - \pi_{city} (PropertyForRent)$

branch.city
'Bristol'

6.



$(\pi_{clientNo, fName, lName} (client)) \times (\pi_{clientNo, propertyNo, comments} (Viewing))$

client.clientNo	client.fName	client.lName	Viewing.clientNo	Viewing.propertyNo	Viewing.comments
'CR76'	'John'	'Kay'	'CR56'	'PA14'	'too small'
'CR76'	'John'	'Kay'	'CR76'	'PG4'	'too -ole'
'CR76'	'John'	'Kay'	'CR56'	'PG4'	null
'CR76'	'John'	'Kay'	'CR62'	'PA14'	'no dining room'
'CR76'	'John'	'Kay'	'CR56'	'PG36'	null
'CR56'	'Aline'	'Stewart'	'CR56'	'PA14'	'too small'
'CR56'	'Aline'	'Stewart'	'CR76'	'PG4'	'too -ole'
'CR56'	'Aline'	'Stewart'	'CR56'	'PG4'	null
'CR56'	'Aline'	'Stewart'	'CR62'	'PA14'	'no dining room'
'CR56'	'Aline'	'Stewart'	'CR56'	'PG36'	null

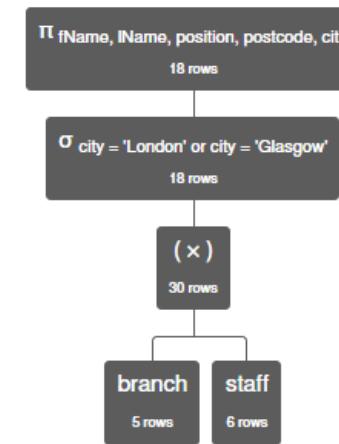
7.



π clientNo, staffNo, branchNo (Registration)

Registration.clientNo	Registration.staffNo	Registration.branchNo
'CR76'	'SL41'	'B005'
'CR56'	'SG37'	'B003'
'CR74'	'SG37'	'B003'
'CR62'	'SA9'	'B007'

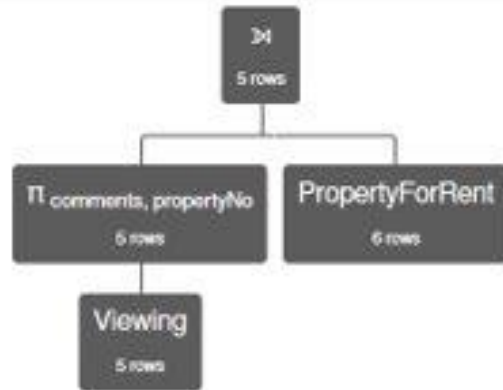
8.



π fName, lName, position, postcode, city σ city = 'London' or city = 'Glasgow' (branch \times staff)

staff.fName	staff.lName	staff.position	branch.postcode	branch.city
'John'	'White'	'Manager'	'SW1 4EH'	'London'
'Ann'	'Beech'	'Assistant'	'SW1 4EH'	'London'
'David'	'Ford'	'Supervisor'	'SW1 4EH'	'London'
'Mary'	'Howe'	'Assistant'	'SW1 4EH'	'London'
'Susan'	'Brand'	'Manager'	'SW1 4EH'	'London'
'Julie'	'Lee'	'Assistant'	'SW1 4EH'	'London'
'John'	'White'	'Manager'	'G11 9QX'	'Glasgow'
'Ann'	'Beech'	'Assistant'	'G11 9QX'	'Glasgow'
'David'	'Ford'	'Supervisor'	'G11 9QX'	'Glasgow'

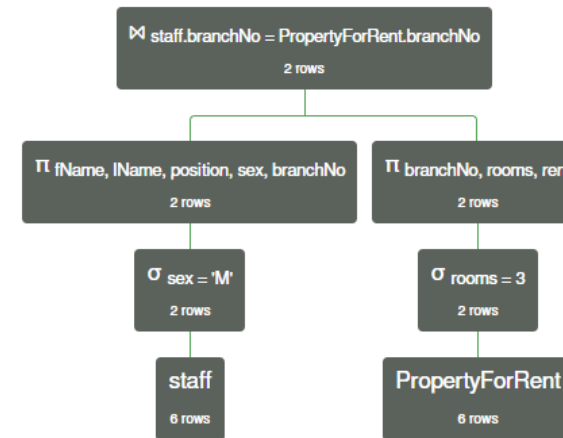
9.



$$\Pi_{\text{comments, propertyNo}} (\text{Viewing}) \bowtie \text{PropertyForRent}$$

Viewing.comments	Viewing.propertyNo	PropertyForRent.street	PropertyForRent.city
'too small'	'PA14'	'16 Holhead'	'Aberdeen'
'too --ote'	'PG4'	'6 Lawrence St'	'Glasgow'
<i>null</i>	'PG4'	'6 Lawrence St'	'Glasgow'
'no dining room'	'PA14'	'16 Holhead'	'Aberdeen'
<i>null</i>	'PG36'	'2 Manor Rd'	'Glasgow'

10.



$$(\Pi_{\text{fName, lName, position, sex, branchNo}} (\sigma_{\text{sex} = 'M'} (\text{staff}))) \bowtie_{\text{staff.branchNo} = \text{PropertyForRent.branchNo}} (\Pi_{\text{branchNo, rooms, rent}} (\sigma_{\text{rooms} = 3} \text{PropertyForRent}))$$

staff.fName	staff.lName	staff.position	staff.sex	staff.branchNo	PropertyForRent.branchNo	PropertyForRent.rooms
'David'	'Ford'	'Supervisor'	'M'	'B003'	'B003'	3
'David'	'Ford'	'Supervisor'	'M'	'B003'	'B003'	3

Даалгавар 4

(a) PhotelNo(sprice . 50(Room))

50-с дээш үнэтэй буудлын өрөөг харуулж байна

(b) sHotel,hotelNo 5 Room.hotelNo(Hotel 3 Room)

Зочид буудлын дугаар ба өрөөнүүдийн дугааруудыг гаргана

(c) PhotelName(Hotel 1Hotel.hotelNo 5 Room.hotelNo(sprice . 50(Room)))

50-с дээш үнэтэй өрөөнүүдийн дугаар, зочид буудлийн дугаар ба нэрийг гаргана.

(d) Guest 5 (sdateTo \$ '1-Jan-2007' (Booking))

2007-01-01 оноос хойших бүх захиалгуудыг харуулж байна

(e) Hotel 2 Hotel.hotelNo 5 Room.hotelNo(sprice . 50(Room))

50-с их үнэтэй зочид буудлын өрөөнүүдийн талаарх мэдээллийг гаргана

(f) PguestName, hotelNo(Booking 1 Booking.guestNo 5 Guest.guestNo Guest)

4 PhotelNo(scity 5 'London'(Hotel))

Лондонд байрладаг зочид буудлын салбарт захиалга өгсөн зочидийн мэдээллийг гаргана